



STATEMENT OF BASIS

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BAQ Engineering Services Division

2600 Bull Street, Columbia, SC 29201

Phone: 803-898-4123 Fax: 803-898-4079

Company Name:

Grant Allendale LP

Permit Writer:

Anna Mooney

Permit Number:

0160-0020-CB

Date:

November 24, 2008

DATE APPLICATION RECEIVED: December 27, 2007

FACILITY DESCRIPTION

Grant Allendale LP (Grant – Allendale) operates an oriented strand board (OSB) manufacturing facility in Allendale County in Fairfax, South Carolina (the Allendale Mill). The Allendale mill consists of wood fired furnaces used to provide heat to rotary dryers, a thermal oil heater, a multi-opening press, finishing equipment, and raw material handling equipment associated with stranding, flaking, forming, handling, and storing wood. All significant particulate matter emission sources at the facility are controlled by either a bagfilter or a wet electrostatic precipitator (WESP). Volatile organic compound (VOC) emissions from the furnaces, dryers, and the press are controlled by four regenerative thermal oxidizers (RTOs).

The maximum OSB production rate is 175 thousand square feet (MSF_{3/8}) per hour and 1,200,000 MSF_{3/8} per year on a 12-month rolling basis. The facility continuously produces OSB at 8,760 hours of operation per year. Three wood fired furnaces (Unit ID 01, 02 and 03) are used to heat process air for the dryers, and two of the furnaces (Unit 01 and 02) and the thermal oil heater (Unit ID 04) are used to heat thermal oil that is used by the press.

PROJECT DESCRIPTION

Construction Permit 0160-0020-CA was originally issued on September 12, 2005. On September 6, 2006, Grant – Allendale submitted an as-built construction application to address equipment modifications that occurred during construction. A construction permit to address the as-built changes was never issued, due to stack testing results that revealed that the facility is a PSD major facility. On December 27, 2007 Grant – Allendale submitted a PSD construction permit application that addresses the updated emissions at the facility. In addition, the equipment changes addressed in the as-built permit application were incorporated into the PSD permit application. As-built changes include the following:

- Changes were made to the permitted baghouses, including the installation of three additional baghouses, the removal of one baghouse, and changes to the permitted airflow capacities. Modifications to the baghouses are shown in the table below:

OP/CP ID	Original Equip ID	As-Built Equip ID	Equipment Description	Original Capacity (acfm)	As-Built Capacity (acfm)	As-Built Stack ID
CA-09	BH05	BH02a BH02b	Greenend Baghouse #2a Greenend Baghouse #2b	120,000	72,800 80,200	D2
CA-10	BH04	N/A	HP Blower Baghouse – Removed	10,000	---	---
CA-11	BH03	BH03b BH04a BH04b	Forming Feed Baghouse #3b Forming Line Baghouse #4a Forming Line Baghouse #4b	90,000	50,700 54,200 69,810	D3
CA-12	BH02	BH03a	Screens/Bins Baghouse #3a	110,000	48,700	H1 & H2
CA-13	BH01	BH01	Finishing Line Baghouse	90,000	76,500	D1
			Total Airflow	420,000	452,910	

- Two additional wet electrostatic precipitators (WESPs) were installed. The addition of the WESPs did not change the overall permitted WESP capacity. Emissions from DRY1 and DRY2 will be controlled by two WESPs each, instead of one each.
- One 1400hp emergency generator was installed, instead of two 1000hp generators.
- The rating on the diesel fire pump changed from 500 hp to 525 hp.
- NSPS subparts Db and Dc have been revised since the original permit was issued. There are new limits for the sources subject to these subparts.
- The stacks for the paint spray booths have been capped, therefore no PM/PM10 is emitted to the atmosphere from this source. The paint booths have been removed from dispersion modeling.
- The facility has installed 14 space heaters of varying sizes instead of sixteen 0.5 MMBtu/hr units.
- Changes were made to the site plan (including building sizes, stack locations, and other stack parameters). Dispersion modeling was updated to reflect these changes.



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In addition, the previously permitted Selective Non-Catalytic Reduction (SNCR) control devices are being removed with the issuance of this permit. See Section VI.1.b.ii of the preliminary determination for a complete explanation of why SNCR control has been determined to be technically infeasible.

EMISSION SOURCES

Unit ID	Unit Description	Control Device ID	Stack ID
01	334x10 ⁶ BTU/hr Wood Fired Furnace to Heat Flake Dryer & Thermal Oil System	WESP1 and WESP2, RTO 1 to 4	H1&H2
02	334x10 ⁶ BTU/hr Wood Fired Furnace to Heat Flake Dryer & Thermal Oil System	WESP3 and WESP4, RTO 1 to 4	H1&H2
03	197x10 ⁶ BTU/hr Wood Fired Furnace to Heat Fines Dryer	WESP5, RTO 1 to 4	H1&H2
04	75x10 ⁶ BTU/hr Backup Thermal Oil Heater	---	E1
05, 06, 07	Rotary Flake Dryers (235,000 lb Oven Dry /hr combined capacity)	WESP1 to 5, RTO 1 to 4	H1&H2
08	Multi-opening Press	WESP6, FF1 to 3, WESP1 to 5, RTO 1 to 4	H1&H2
09	Green End System – Strandere, Green Bins, and Screens	BH02a and BH02b	D2
10 - VOID	VOID	---	---
11	Forming Line Bins and Saws	BH03b, BH04a, BH04b	D3
12	Dry Bins/Screens/Conveyors	BH03a	D3a
13	Finishing	BH01 & BH01a	D1, D1a
14	Paint Booths/Stencils	---	---
15	Propane Vaporizers	---	PPVP1, PPVP2
16	525 hp Fire Water Diesel Pump (Back-up)	---	DFPE
17	1,400 hp Diesel Emergency Generator # 1	---	EMRG1E
18	Natural Gas Space Heaters (14 Units)	---	SHTRE

CONTROL EQUIPMENT

Control Device ID	Stack ID	Control Device Description	Pollutant(s) Controlled	Efficiency Capture (%)	Efficiency Removal (%)
RTO1	H1	18x10 ⁶ BTU/hr Regenerative Thermal Oxidizer	VOC CO	100 100	95 75
RTO2	H1	18x10 ⁶ BTU/hr Regenerative Thermal Oxidizer	VOC CO	100 100	95 75
RTO3	H2	18x10 ⁶ BTU/hr Regenerative Thermal Oxidizer	VOC CO	100 100	95 75



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Control Device ID	Stack ID	Control Device Description	Pollutant(s) Controlled	Efficiency Capture (%)	Efficiency Removal (%)
RTO4	H2	18x10 ⁶ BTU/hr Regenerative Thermal Oxidizer	VOC CO	100 100	95 75
WESP1	H1&H2	Wet Electrostatic Precipitator	PM/PM ₁₀	100	97
WESP2	H1&H2	Wet Electrostatic Precipitator	PM/PM ₁₀	100	97
WESP3	H1&H2	Wet Electrostatic Precipitator	PM/PM ₁₀	100	97
WESP4	H1&H2	Wet Electrostatic Precipitator	PM/PM ₁₀	100	97
WESP5	H1&H2	Wet Electrostatic Precipitator	PM/PM ₁₀	100	97
WESP6	H1&H2	Wet Electrostatic Precipitator	PM/PM ₁₀	100	97
BH02a	D2	Green End Baghouse	PM/PM ₁₀	100	99.9
BH02b	D2	Green End Baghouse	PM/PM ₁₀	100	99.9
BH03b	D3	Forming and Blending Baghouse	PM/PM ₁₀	100	99.9
BH04a	D3	Forming and Blending Baghouse	PM/PM ₁₀	100	99.9
BH04b	D3	Forming and Blending Baghouse	PM/PM ₁₀	100	99.9
BH03a	D3a	Screens/Dry Bins/Conveyors Baghouse	PM/PM ₁₀	100	99.9
BH01	D1	Finishing Line Baghouse	PM/PM ₁₀	100	99.9
BH01a	D1a	Finishing Line Baghouse	PM/PM ₁₀	100	99.9
PBF1	F1	Filter #1	PM/PM ₁₀	100	99.6
PBF2	F2	Filter #2	PM/PM ₁₀	100	99.6

EXEMPT SOURCE/INSIGNIFICANT ACTIVITIES DESCRIPTION

Equip ID	Exempt Source Description (Exemption Date)	Basis
TNK1	33,021 gal. Tank #1 - MDI	SC 61-62.1, Section II(F)(2)(g)
TNK2	33,021 gal. Tank #2 - MDI	SC 61-62.1, Section II(F)(2)(g)
TNK3	33,021 gal. Tank #3 - RESIN	SC 61-62.1, Section II(F)(2)(g)
TNK4	33,021 gal. Tank #4 - RESIN	SC 61-62.1, Section II(F)(2)(g)
TNK5	33,021 gal. Tank #5 - RESIN	SC 61-62.1, Section II(F)(2)(g)
TNK6	33,021 gal. Tank #6 - RESIN	SC 61-62.1, Section II(F)(2)(g)



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Equip ID	Exempt Source Description (Exemption Date)	Basis
TNK7	33,021 gal. Tank #7 - WAX	SC 61-62.1, Section II(F)(2)(g)
TNK8	33,021 gal. Tank #8 - WAX	SC 61-62.1, Section II(F)(2)(g)
TNK9	33,021-gallon Tank #9-RESIN	SC 61-62.1, Section II(F)(2)(g)
TNK10	30,000-gallon Diesel Storage Tank	SC 61-62.1, Section II(F)(2)(g)
TNK11	30,000-gallon Diesel Storage Tank	SC 61-62.1, Section II(F)(2)(g)
TNK12	500-gallon Gasoline Storage Tank	SC 61-62.1, Section II(F)(2)(g)
PCR1	Portal Crane # 1	SC 61-62.1, Section II(F)(2)(g)
PCR2	Portal Crane # 1	SC 61-62.1, Section II(F)(2)(g)
DEB1	Debarker # 1	SC 61-62.1, Section II(F)(2)(g)
DEB2	Debarker # 2	SC 61-62.1, Section II(F)(2)(g)
DEB3	Debarker # 3	SC 61-62.1, Section II(F)(2)(g)
RDF	Road Fugitives	SC 61-62.1, Section II(F)(2)(g)
LYF	Log Yard and Storage Pile Fugitives	SC 61-62.1, Section II(F)(2)(g)

EMISSIONS

FACILITY WIDE EMISSIONS		
Pollutant	Uncontrolled Emissions	Controlled Emissions
	TPY	TPY
PM/PM ₁₀	10982.69	310.77
NO _x	438.83	438.83
SO ₂	118.94	118.94
CO	4178.02	1070.64
VOC	8998.84	1417.12
Formaldehyde	1330.32	141.9
Methanol	240.22	162.7
Total HAP	1871.23	320.91



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PROJECT REGULATORY APPLICABILITY REVIEW

Regulation	Applicable		Comments
	Yes	No	
South Carolina Regulation 61-62.1 through 62.99: Air Pollution Regulations (PROJECT ONLY)			
Section II(E): Synthetic Minor		X	The facility is PSD major for PM/PM10, CO, VOC, SO ₂ , and NO _x .
Section II(G): Conditional Major		X	The facility is PSD major for PM/PM10, CO, VOC, SO ₂ , and NO _x .
Standard 1: Fuel Burning Operations	X		Unit IDs 01, 02, and 04 are subject to this standard. <i>Emissions Limits:</i> Each Unit ID is subject to the following limits: 20% opacity, 0.6 lb PM per 10 ⁶ Btu input, and 3.5 lb SO ₂ per 10 ⁶ Btu input. <i>Monitoring Conditions:</i> Per Section IV.A.2.a, Unit IDs 01 and 02 are required to install, calibrate, operate, and maintain continuous monitoring systems for opacity. The facility has installed continuous opacity monitoring systems on Stacks H1 and H2. Unit ID 04 is not subject to continuous monitoring because it is less than 100 x 10 ⁶ Btu/hr. <i>Periodic Testing:</i> Per Section VI.C, the facility is required to test Unit IDs 01 and 02 for PM emissions every two years. Unit ID 03 is not subject to this standard because it does not have a thermal oil system, thus it does not fit the definition of a fuel burning operation.
Standard 2: Ambient Air Quality Standards	X		The facility has demonstrated compliance through modeling. See modeling summary dated 3/13/08 by OTP.



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Regulation	Applicable		Comments
	Yes	No	
Standard 3: Waste Combustion/Reduction (state only)	X		<p><i>Emissions Limits:</i> Unit IDs 01, 02, and 03 (Furnaces FF1 and FF2 [Industrial Boilers], and FF3 [Industrial Furnace]) are subject to this standard because they burn WESP sludge, degrade boards, bender cleanings, paint booth cleanings, used oil, and sump water. In accordance with Section I.J.3, the facility requested an exemption for Unit IDs 01, 02, and 03.</p> <p>Unit IDs 01 and 02 are exempt based on Sections III.J.6 and III.J.7. The facility will be required to do waste analysis as detailed below.</p> <p>Unit ID 03 is exempt based on Section III.L.5 and III.L.6. The facility will be required to do waste analysis as detailed below.</p> <p>RTOs 1 – 4 are subject to this standard under Section III.I. Because the Plywood MACT does not address PM emissions, an exemption cannot be granted for the RTOs. Under Section III.I, Opacity is limited to 20% and PM emissions are limited to 0.5lb/10⁶ BTU.</p> <p><i>Waste Analysis:</i> Per Sections V.A, V.B, V.C, V.E, and V.F Unit IDs 1-3 are subject to the following: The waste must be classified as hazardous or non-hazardous in accordance with South Carolina Hazardous Waste Management regulations under 61-79.261. The waste must be analyzed for heat value, total halogen, percent nitrogen and percent sulfur, air toxics identified in Standard 8, other potential air pollutants besides NO_x, CO, SO₂, opacity and particulate matter that are generated by the source of the waste stream, and other analyses as may be required by the Department</p> <p>Per Section V.G, RTOs 1 – 4 are exempt from the waste analysis requirements of Sections A-F. The main components of the waste are VOC, formaldehyde, and methanol. The waste burned at the RTOs will be tested as stated in the analysis for the furnaces.</p>
Standard 3.1: HMI Waste Incinerators		X	The facility does not incinerate medical waste.



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Standard 4: Emissions from Process Industries	X		<p>The facility is subject to the following sections: Section VIII: (Process Weight Rates have been updated in this permit application)</p> <table><tr><th>Process</th><th>Process Weight Rate (tons/hr)</th><th>Emission Limit (lbs/hr)</th></tr><tr><td>03</td><td>23.78</td><td>34.3</td></tr><tr><td>05,06,07</td><td>117.5</td><td>52.9</td></tr><tr><td>08</td><td>117.5</td><td>52.9</td></tr><tr><td>09</td><td>117.5</td><td>52.9</td></tr><tr><td>11</td><td>117.5</td><td>52.9</td></tr><tr><td>12</td><td>117.5</td><td>52.9</td></tr><tr><td>13</td><td>117.5</td><td>52.9</td></tr></table> <p>The process weight rate for Unit ID 03 (furnace) is calculated based on the maximum fuel throughput and fuel heating value as follows: 197,000,000 Btu/hr x lb/4,142 Btu of wood fuel. The process weight rates for Unit IDs 05 – 09 and 11-13 were determined from the dryer throughput capacities.</p> <p>Section IX.B: Opacity limit is 20%.</p>	Process	Process Weight Rate (tons/hr)	Emission Limit (lbs/hr)	03	23.78	34.3	05,06,07	117.5	52.9	08	117.5	52.9	09	117.5	52.9	11	117.5	52.9	12	117.5	52.9	13	117.5	52.9
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11	117.5	52.9																									
12	117.5	52.9																									
13	117.5	52.9																									
Standard 5: Volatile Organic Compounds		X	None of the processes, which are regulated by the regulation, apply.																								
Standard 5.1: BACT/LAER For VOC (state only)	X		The facility is subject to BACT. In addition, the facility is also PSD major for VOCs. A complete BACT analysis for VOC emissions was performed. A summary of the BACT emission limits can be found listed below under Standard 7.																								
Standard 5.2: Control of Oxides of Nitrogen		X	Although the wood fired furnaces (Unit IDs 01-03) and thermal oil heater (Unit ID 04) have heat input capacities greater than 10 MMBtu/hr, they are not subject to this standard per section I.a because they have undergone a BACT analysis for NO _x emissions under Standard 7.																								



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Standard 7: Prevention of Significant Deterioration	X		<p>The facility is a PSD major source. A complete BACT analysis for PM/PM₁₀, CO, NO_x, SO₂, and VOC was performed and can be found in the preliminary determination. BACT emission limits will be established as follows:</p> <table border="1"> <thead> <tr> <th>Stack ID</th><th>Pollutant</th><th>Emission Limit (lbs/hr)</th><th>Emission Limit (tons/yr)</th></tr> </thead> <tbody> <tr> <td>H1, H2</td><td>PM / PM₁₀</td><td>58.99 (combined)</td><td>227.35 (combined)</td></tr> <tr> <td>H1, H2</td><td>NO_x</td><td>119.28 (combined)</td><td>408.95 (combined)</td></tr> <tr> <td>H1, H2</td><td>SO₂</td><td>28.14 (combined)</td><td>117.10 (combined)</td></tr> <tr> <td>H1, H2</td><td>CO</td><td>302.11 (combined)</td><td>1035.79 (combined)</td></tr> <tr> <td>H1, H2</td><td>VOC</td><td>116.39 (combined)</td><td>399.04 (combined)</td></tr> <tr> <td>E1</td><td>PM / PM₁₀</td><td>0.54</td><td>2.38</td></tr> <tr> <td>E1</td><td>NO_x</td><td>3.57</td><td>15.64</td></tr> <tr> <td>E1</td><td>SO₂</td><td>0.04</td><td>0.19</td></tr> <tr> <td>E1</td><td>CO</td><td>6.00</td><td>26.28</td></tr> <tr> <td>E1</td><td>VOC</td><td>0.39</td><td>1.72</td></tr> <tr> <td>D1</td><td>PM / PM₁₀</td><td>1.59 lb/hr</td><td>6.97 tpy</td></tr> <tr> <td>D1</td><td>VOC</td><td>5.53 lb/hr</td><td>18.97 tpy</td></tr> <tr> <td>D1a</td><td>PM / PM₁₀</td><td>1.87 lb/hr</td><td>8.20 tpy</td></tr> <tr> <td>D1a</td><td>VOC</td><td>6.51 lb/hr</td><td>22.32 tpy</td></tr> <tr> <td>D3a</td><td>PM / PM₁₀</td><td>1.01 lb/hr</td><td>4.44 tpy</td></tr> <tr> <td>D3a</td><td>VOC</td><td>6.55 lb/hr</td><td>22.47 tpy</td></tr> <tr> <td>D3</td><td>PM / PM₁₀</td><td>3.64 lb/hr</td><td>15.93 tpy</td></tr> <tr> <td>D3</td><td>VOC</td><td>79.78 lb/hr</td><td>273.53 tpy</td></tr> <tr> <td>D2</td><td>PM / PM₁₀</td><td>10.19 lb/hr</td><td>44.63 tpy</td></tr> <tr> <td>D2</td><td>VOC</td><td>185.81</td><td>637.06 tpy</td></tr> <tr> <td>TNK1 – TNK9</td><td>VOC</td><td>0.16 lb/hr (combined)</td><td>0.70 tpy (combined)</td></tr> <tr> <td>TNK12</td><td>VOC</td><td>0.03 lb/hr</td><td>0.12 tpy</td></tr> <tr> <td>TNK10 TNK11</td><td>VOC</td><td>0.01 lb/hr (combined)</td><td>0.01 tpy (combined)</td></tr> <tr> <td>DFPE</td><td>PM / PM₁₀</td><td>0.41 lb/hr</td><td>0.10 tpy</td></tr> <tr> <td>DFPE</td><td>NO_x</td><td>5.90 lb/hr</td><td>1.47 tpy</td></tr> </tbody> </table>	Stack ID	Pollutant	Emission Limit (lbs/hr)	Emission Limit (tons/yr)	H1, H2	PM / PM ₁₀	58.99 (combined)	227.35 (combined)	H1, H2	NO _x	119.28 (combined)	408.95 (combined)	H1, H2	SO ₂	28.14 (combined)	117.10 (combined)	H1, H2	CO	302.11 (combined)	1035.79 (combined)	H1, H2	VOC	116.39 (combined)	399.04 (combined)	E1	PM / PM ₁₀	0.54	2.38	E1	NO _x	3.57	15.64	E1	SO ₂	0.04	0.19	E1	CO	6.00	26.28	E1	VOC	0.39	1.72	D1	PM / PM ₁₀	1.59 lb/hr	6.97 tpy	D1	VOC	5.53 lb/hr	18.97 tpy	D1a	PM / PM ₁₀	1.87 lb/hr	8.20 tpy	D1a	VOC	6.51 lb/hr	22.32 tpy	D3a	PM / PM ₁₀	1.01 lb/hr	4.44 tpy	D3a	VOC	6.55 lb/hr	22.47 tpy	D3	PM / PM ₁₀	3.64 lb/hr	15.93 tpy	D3	VOC	79.78 lb/hr	273.53 tpy	D2	PM / PM ₁₀	10.19 lb/hr	44.63 tpy	D2	VOC	185.81	637.06 tpy	TNK1 – TNK9	VOC	0.16 lb/hr (combined)	0.70 tpy (combined)	TNK12	VOC	0.03 lb/hr	0.12 tpy	TNK10 TNK11	VOC	0.01 lb/hr (combined)	0.01 tpy (combined)	DFPE	PM / PM ₁₀	0.41 lb/hr	0.10 tpy	DFPE	NO _x	5.90 lb/hr	1.47 tpy
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D3	PM / PM ₁₀	3.64 lb/hr	15.93 tpy																																																																																																								
D3	VOC	79.78 lb/hr	273.53 tpy																																																																																																								
D2	PM / PM ₁₀	10.19 lb/hr	44.63 tpy																																																																																																								
D2	VOC	185.81	637.06 tpy																																																																																																								
TNK1 – TNK9	VOC	0.16 lb/hr (combined)	0.70 tpy (combined)																																																																																																								
TNK12	VOC	0.03 lb/hr	0.12 tpy																																																																																																								
TNK10 TNK11	VOC	0.01 lb/hr (combined)	0.01 tpy (combined)																																																																																																								
DFPE	PM / PM ₁₀	0.41 lb/hr	0.10 tpy																																																																																																								
DFPE	NO _x	5.90 lb/hr	1.47 tpy																																																																																																								



STATEMENT OF BASIS

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BAQ Engineering Services Division

2600 Bull Street, Columbia, SC 29201

Phone: 803-898-4123 Fax: 803-898-4079

Company Name:

Grant Allendale LP

Permit Writer:

Anna Mooney

Permit Number:

0160-0020-CB

Date:

November 24, 2008

PROJECT REGULATORY APPLICABILITY REVIEW

Regulation	Applicable		Comments				
	Yes	No					
Standard 7: Prevention of Significant Deterioration	X			Stack ID	Pollutant	Emission Limit (lbs/hr)	Emission Limit (tons/yr)
			DFPE	SO ₂	0.39	0.10	
			DFPE	CO	1.27	0.32	
			DFPE	VOC	0.47	0.12	
			EMERG	PM (total)	0.25	0.06	
			EMERG	PM ₁₀ (total)	0.20	0.05	
			EMERG	NO _x	11.41	2.85	
			EMERG	SO ₂	5.40	1.35	
			EMERG	CO	3.03	0.76	
			EMERG	VOC	0.32	0.08	
			PB1, PB2 (Fugitive Sources)	VOC	9.24 (combined)	40.45 (combined)	
			PV	PM / PM ₁₀	0.04 lb/hr	0.04 tpy	
			PV	NO _x	1.20 lb/hr	1.20 tpy	
			PV	SO ₂	0.15	0.15	
			PV	CO	0.17	0.17	
			PV	VOC	0.04	0.04	
			Facility-Wide	All	1.2 billion SF/yr of OSB production (3/8 basis) on a rolling 12-month average.		
			In addition, the following limitations will also apply:				
			Unit ID	Compound	Powder Phenolic Resin	Liquid Phenolic Resin	
8, 11, 12, 13	Free Formaldehyde (HCOH)	0.2 %	0.2 %				
8, 11, 12, 13	Free Methanol (MeOH)	0 %	0.6%				
Standard 7(c): Ambient Air Increments	X		The facility has demonstrated compliance through modeling. See modeling summary dated 3/13/08 by OTP.				
Standard 7.1: Standards for Non Attainment Areas		X	The facility is not located in a non attainment area.				
Standard 8: Toxic Air Pollutants (state only)	X		The facility has demonstrated compliance through modeling. See modeling summary dated 3/13/08 by OTP.				
Regulation 61-62.6: Control of Fugitive Particulate Matter	X		The fugitive PM (Dust) emissions are controlled in a manner that should not produce undesirable levels of PM (Dust) emissions.				
Regulation 61-62.60: SC Designated Facility Plan and NSPS	X		The facility is subject to the following NSPS Subparts - Db, Dc, and IIII.				



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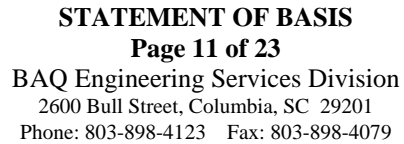
November 24, 2008

PROJECT REGULATORY APPLICABILITY REVIEW

Regulation	Applicable		Comments
	Yes	No	
Regulation 61-62.61: NESHAP		X	The facility does not emit any of the pollutants subject to this standard.
Regulation 61-62.63: NESHAP For Source Categories	X		The facility is a major source for HAPs. The facility is subject to the following subparts – DDDD (Plywood), ZZZZ (RICE), and DDDDD (Boiler).
Regulation 61-62.68: Chemical Accident Prevention		X	Propane This regulation will not apply to the facility even though more than 10,000 lb of propane will be stored onsite. All of the propane stored onsite will be used as fuel for the mobile equipment and RTO back-up system. Therefore the facility is exempt from the requirements to develop and implement a Risk management Plan for this propane.
Regulation 61-62.70: Title V	X		The facility is a major source and has submitted a Title V application permit along with the PSD construction permit application.
Regulation 61-62.72: Acid Rain		X	The facility is not a utility.
Regulation 61-62.96: Nitrogen Oxides (NO _x) Budget Trading Program		X	The facility does not use fossil fuel for combustion.
Regulation 61-62.99: Nitrogen Oxides (NO _x) Budget Program Requirements for Stationary Sources Not In the Trading Program		X	The facility does not manufacture cement.
Other		X	

Federal Regulations (PROJECT ONLY)

NSPS (Part 60) Subpart(s)	X		<p>Subpart Db applies to Unit IDs 01 and 02 as follows: Section 60.43b(f) limits opacity to 20%, Section 60.43b(g) states that PM and opacity standards apply at all times, except during Startup, shutdown, or malfunction. Section 60.43b(h)(1) limits PM emissions to 0.030 lb/MMBtu heat input. Section 60.48b(a) requires a COMS to monitor opacity. Sections 60.49b(d) and (f) require the facility to maintain daily records of the amount of fuel combusted, and records of opacity. Unit ID 03 is not subject to this subpart because it is not a steam generating unit.</p> <p>Subpart Dc applies to Unit ID 04 as follows: Section 60.43c(e)(1) limits PM emissions to 0.030 lb/MMBtu heat input. In addition, Unit ID 04 is subject to the recordkeeping and reporting requirements of Sections 60.43c(g) and (j).</p> <p>Subpart Kb does not apply to the tanks at the facility, as summarized in the following table:</p>
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Permit Writer:	Anna Mooney
Date:	November 24, 2008

Regulation	Applicable		Comments																																																								
	Yes	No																																																									
NSPS (Part 60) Subpart(s)	X		<table border="1"> <thead> <tr> <th>Equip. ID</th><th>Affected Source(s)</th><th>NSPS Standard</th><th>Reason Not Subject</th></tr> </thead> <tbody> <tr> <td>TNK1</td><td>33,021 gal. Tank #1 - MDI</td><td>Kb</td><td>Maximum true vapor pressure 0.000002 kPa</td></tr> <tr> <td>TNK2</td><td>33,021 gal. Tank #2 - MDI</td><td>Kb</td><td>Maximum true vapor pressure 0.000002 kPa</td></tr> <tr> <td>TNK3</td><td>33,021 gal. Tank #3 - RESIN</td><td>Kb</td><td>Maximum true vapor pressure 3.4 kPa</td></tr> <tr> <td>TNK4</td><td>33,021 gal. Tank #4 - RESIN</td><td>Kb</td><td>Maximum true vapor pressure 3.4 kPa</td></tr> <tr> <td>TNK5</td><td>33,021 gal. Tank #5 - RESIN</td><td>Kb</td><td>Maximum true vapor pressure 3.4 kPa</td></tr> <tr> <td>TNK6</td><td>33,021 gal. Tank #6 - RESIN</td><td>Kb</td><td>Maximum true vapor pressure 3.4 kPa</td></tr> <tr> <td>TNK7</td><td>33,021 gal. Tank #7 - WAX</td><td>Kb</td><td>Maximum true vapor pressure 0.000002 kPa</td></tr> <tr> <td>TNK8</td><td>33,021 gal. Tank #8 - WAX</td><td>Kb</td><td>Maximum true vapor pressure 0.000002 kPa</td></tr> <tr> <td>TNK9</td><td>33,021 gal Tank #8 - WAX</td><td>Kb</td><td>Maximum true vapor pressure 0.000002 kPa</td></tr> <tr> <td>TNK10</td><td>30,000-gallon Diesel Storage Tank</td><td>Kb</td><td>Maximum true vapor pressure 0.01 psia</td></tr> <tr> <td>TNK11</td><td>30,000-gallon Diesel Storage Tank</td><td>Kb</td><td>Maximum true vapor pressure 0.01 psia</td></tr> <tr> <td>TNK12</td><td>500-gallon Gasoline Storage Tank</td><td>Kb</td><td>Capacity less than 19,813 gallons</td></tr> <tr> <td>TNK13</td><td>8,911 gal Ammonium Sulfate Catalyst Tank</td><td>Kb</td><td>Capacity less than 19,813 gallons</td></tr> </tbody> </table>	Equip. ID	Affected Source(s)	NSPS Standard	Reason Not Subject	TNK1	33,021 gal. Tank #1 - MDI	Kb	Maximum true vapor pressure 0.000002 kPa	TNK2	33,021 gal. Tank #2 - MDI	Kb	Maximum true vapor pressure 0.000002 kPa	TNK3	33,021 gal. Tank #3 - RESIN	Kb	Maximum true vapor pressure 3.4 kPa	TNK4	33,021 gal. Tank #4 - RESIN	Kb	Maximum true vapor pressure 3.4 kPa	TNK5	33,021 gal. Tank #5 - RESIN	Kb	Maximum true vapor pressure 3.4 kPa	TNK6	33,021 gal. Tank #6 - RESIN	Kb	Maximum true vapor pressure 3.4 kPa	TNK7	33,021 gal. Tank #7 - WAX	Kb	Maximum true vapor pressure 0.000002 kPa	TNK8	33,021 gal. Tank #8 - WAX	Kb	Maximum true vapor pressure 0.000002 kPa	TNK9	33,021 gal Tank #8 - WAX	Kb	Maximum true vapor pressure 0.000002 kPa	TNK10	30,000-gallon Diesel Storage Tank	Kb	Maximum true vapor pressure 0.01 psia	TNK11	30,000-gallon Diesel Storage Tank	Kb	Maximum true vapor pressure 0.01 psia	TNK12	500-gallon Gasoline Storage Tank	Kb	Capacity less than 19,813 gallons	TNK13	8,911 gal Ammonium Sulfate Catalyst Tank	Kb	Capacity less than 19,813 gallons
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<p><i>Subpart IIII</i> applies to the emergency diesel generator. The firepump is not subject to this subpart because it was manufactured in April 2006. The emergency generator is subject to the emissions standards listed in Table 1.</p>																																																											



STATEMENT OF BASIS

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BAQ Engineering Services Division

2600 Bull Street, Columbia, SC 29201

Phone: 803-898-4123 Fax: 803-898-4079

Company Name:

Grant Allendale LP

Permit Number:

0160-0020-CB

Permit Writer:

Anna Mooney

Date:

November 24, 2008

PROJECT REGULATORY APPLICABILITY REVIEW

Regulation	Applicable		Comments
	Yes	No	
NESHAP (Part 61) Subpart(s)			The facility does not emit any of the pollutants subject to this standard.
MACT (Part 63) Subpart(s)	X		Subpart DDDD - Affected sources at the facility include the wood fired furnaces (FF1, FF2, and FF3), rotary flake dryers (DRY1, DRY2, DRY3), press, paint booths, green end equipment, blending and forming equipment, finishing equipment and resin storage tanks. The wood fired furnaces are subject to this subpart because emissions from the furnaces are routed through the dryers. Subpart ZZZZ - Affected sources at the facility include the emergency generator and emergency fire pump. Because the affected sources are classified as emergency stationary RICE, per Section 63.6590(b) the facility is only required to meet initial notification requirements.
Compliance Assurance Monitoring (CAM) (Part 64)	X		The facility has submitted a CAM plan along with the Title V application.
Other		X	

SUPPORTING EMISSIONS CALCULATIONS:

Facility emissions have been grouped together and calculated by Stack ID.

Emissions from Stacks H1 & H2

The following sources are including in the emission calculations for Stacks H1 and H2: Unit ID 01, 02, and 03 (Furnaces), Unit ID 05, 06, and 07 (Dryers), Unit ID 08 (Press), and RTOs 1-4. Stack test data was used to calculate PM/PM₁₀, NO_x, CO, VOC, Formaldehyde, and Methanol emissions from all sources venting through these stacks. In addition to the data from the stack testing, condensable PM, SO₂, and HAP/TAP emissions were calculated using AP-42 emission factors.

Emissions from Stack Test Data:

Pollutant	Stack Test Emission Rate ¹	Production Rate ²	Emission Factor	Safety Factor ³	Modified Emission Factor	Maximum Production Rate		Controlled Emissions	
	lb/hr	MSF 3/8/hr	lb/ MSF 3/8		lb/ MSF 3/8	MSF 3/8/hr	MSF 3/8/yr	lb/hr	tpy
PM	15.36	104.2	0.15	1.15	0.17	175	1,200,000	29.67	101.71
PM ₁₀	15.36	104.2	0.15	1.15	0.17	175	1,200,000	29.67	101.71
NO _x	37	95.0	0.39	1.75	0.68	175	1,200,000	119.28	408.95
CO	156.42	104.2	1.50	1.15	1.73	175	1,200,000	302.11	1,035.79
VOC	54.94	95.0	0.58	1.15	0.67	175	1,200,000	116.39	399.04
Formaldehyde	18.18	95.0	0.19	1.15	0.22	175	1,200,000	38.51	132.04
Methanol	1.185	95.0	0.01	1.15	0.01	175	1,200,000	2.51	8.61

Notes: 1. Stack test emission rates are the maximum emission rate from three test runs. VOC emission rates are calculated by converting THC emission rates from Method 25A testing to a VOC as propane value, and adding Method 9801 formaldehyde and methanol results.

2. Production rates correspond to the test run producing the maximum emission rate for each pollutant.

3. The increased safety factor for NO_x emissions from H1 and H2 accounts for the removal of SNCR.



STATEMENT OF BASIS

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BAQ Engineering Services Division

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0160-0020-CB

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November 24, 2008

	Emission Factor	Control Efficiency	Uncontrolled Emissions
Pollutant	lb/ MSF 3/8	%	tpy
PM	0.17	95	2034.24
PM ₁₀	0.17	95	2034.24
NO _x	0.68	0	408.95
CO	1.73	75	4143.18
VOC	0.67	95	7980.76
Formaldehyde	0.22	90	1320.44
Methanol	0.01	90	86.07

Additional Emissions from Stacks H1 and H2 Calculated by Unit ID:

Unit IDs 01, 02, and 03 – Wood Fired Furnace Emissions

Calculations were based on 8,760 operating hours/yr and the following equipment capacities:

FF1 = 334 MMBtu/hr, FF2 = 334 MMBtu/hr, and FF3 = 197 MMBtu/hr

Pollutant	Emission Factor ¹	Control Efficiency ²	Uncontrolled Emissions	Controlled Emissions	
	lb/MMBtu	%	tpy	lb/hr	tpy
Condensable PM ¹	0.017	0	64.41	14.71	64.41
SO ₂ ²	0.025	0	94.72	21.63	94.72

Pollutant	Emission Factor ³	Control Efficiency ⁴	Uncontrolled Emissions	Controlled Emissions	
	lb/MMBtu	%	tpy	lb/hr	tpy
Acetaldehyde	8.30E-04	95%	3.14E+00	3.59E-02	1.57E-01
Acetophenone	3.20E-09	95%	1.21E-05	1.38E-07	6.06E-07
Acrolein	4.00E-03	95%	1.52E+01	1.73E-01	7.58E-01
Benzene	4.20E-03	95%	1.59E+01	1.82E-01	7.96E-01
Bis(2-ethylhexyl)phthalate	4.70E-08	95%	1.78E-04	2.03E-06	8.90E-06
2-Butanone (MEK)	5.40E-06	95%	2.05E-02	2.34E-04	1.02E-03
Carbon Tetrachloride	4.50E-05	95%	1.70E-01	1.95E-03	8.52E-03
Chlorine	7.90E-04	95%	2.99E+00	3.42E-02	1.50E-01
Chlorobenzene	3.30E-05	95%	1.25E-01	1.43E-03	6.25E-03
Chloroform	2.80E-05	95%	1.06E-01	1.21E-03	5.30E-03
2,4-Dinitrophenol	1.80E-07	95%	6.82E-04	7.79E-06	3.41E-05
Ethylbenzene	3.10E-05	95%	1.17E-01	1.34E-03	5.87E-03
Hydrogen Chloride	1.90E-02	95%	7.20E+01	8.22E-01	3.60E+00
Naphthalene	9.70E-05	95%	3.68E-01	4.20E-03	1.84E-02
4-Nitrophenol	1.10E-07	95%	4.17E-04	4.76E-06	2.08E-05
Pentachlorophenol	5.10E-08	95%	1.93E-04	2.21E-06	9.66E-06



STATEMENT OF BASIS

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Pollutant	Emission Factor ³	Control Efficiency ⁴	Uncontrolled Emissions	Controlled Emissions	
	lb/MMBtu	%	tpy	lb/hr	tpy
Phenol	5.10E-05	95%	1.93E-01	2.21E-03	9.66E-03
Propionaldehyde	6.10E-05	95%	2.31E-01	2.64E-03	1.16E-02
Styrene	1.90E-03	95%	7.20E+00	8.22E-02	3.60E-01
2,3,7,8-Tetrachlorodibenzo-p-dioxin	8.60E-12	95%	3.26E-08	3.72E-10	1.63E-09
Toluene	9.20E-04	95%	3.49E+00	3.98E-02	1.74E-01
2,4,6-Trichlorophenol	2.20E-08	95%	8.34E-05	9.52E-07	4.17E-06
Vinyl Chloride	1.80E-05	95%	6.82E-02	7.79E-04	3.41E-03
Xylenes	2.50E-05	95%	9.47E-02	1.08E-03	4.74E-03
Antimony	7.90E-06	95%	2.99E-02	3.42E-04	1.50E-03
Arsenic	2.20E-05	95%	8.34E-02	9.52E-04	4.17E-03
Beryllium	1.10E-06	95%	4.17E-03	4.76E-05	2.08E-04
Cadmium	4.10E-06	95%	1.55E-02	1.77E-04	7.77E-04
Chromium	2.10E-05	95%	7.96E-02	9.08E-04	3.98E-03
Cobalt	6.50E-06	95%	2.46E-02	2.81E-04	1.23E-03
Lead	4.80E-05	95%	1.82E-01	2.08E-03	9.09E-03
Manganese	1.60E-03	95%	6.06E+00	6.92E-02	3.03E-01
Mercury	3.50E-06	95%	1.33E-02	1.51E-04	6.63E-04
Nickel	3.30E-05	95%	1.25E-01	1.43E-03	6.25E-03
Phosphorous	2.70E-05	95%	1.02E-01	1.17E-03	5.11E-03
Selenium	2.80E-06	95%	1.06E-02	1.21E-04	5.30E-04

- Notes:
1. Emission factors taken from AP-42 Section 1.6, Table 1.6-1.
 2. Emission factor taken from AP-42 Section 1.6, Table 1.6-2.
 3. Emission factors taken from AP-42 Section 1.6, Tables 1.6-3 and 1.6-4.
 4. Control efficiency taken from SPI (vendor).

Unit IDs 05, 06, and 07 – Dryers

Calculations were based on 8,760 operating hours/yr and the following equipment capacities:

DRY1 = 85,000 lb OD/hr, DRY2 = 85,000 lb OD/hr, and DRY4 = 65,000 lb OD/hr

Pollutant	Emission Factor ¹	Control Efficiency ²	Uncontrolled Emissions	Controlled Emissions	
	lb/ODT	%	tpy	lb/hr	tpy
Condensable PM	0.098	93.47	771.98	11.52	50.44

Pollutant	Emission Factor ³	Control Efficiency ⁴	Uncontrolled Emissions	Controlled Emissions	
	lb/ODT	%	tpy	lb/hr	tpy
Acetaldehyde	0.110	95%	56.61	0.65	2.83
Acrolein	0.072	95%	37.05	0.42	1.85
Benzene	0.007	95%	3.45	0.04	0.17
Cumene	0.055	95%	28.31	0.32	1.42
MIBK	0.008	95%	4.01	0.05	0.20
Phenol	0.015	95%	7.72	0.09	0.39



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	Emission Factor ³	Control Efficiency ⁴	Uncontrolled Emissions	Controlled Emissions	
Propionaldehyde	0.011	95%	5.66	0.06	0.28
Toluene	0.015	95%	7.72	0.09	0.39
Xylenes	0.010	95%	5.15	0.06	0.26

- Notes:
1. Emission factor taken from AP-42-Section 10.6, Table 10.6.1-1 for condensable PM using a WESP and RTO.
 2. Condensable PM emission factor is for dryers with a WESP and RTO. Therefore, vendor control efficiency is not included.
 3. Emission factors taken from AP-42 Section 10.6, Table 10.6.1-3.
 4. Control efficiency taken from SPI (vendor).

Unit ID 08 – Press - Calculations were based on 8,760 operating hours/yr and the following:

Press Capacity = 175.00 MSF 3/8"/hr = 1.2 x 10⁶ MSF 3/8"/yr, Capture efficiency = 100%

Pollutant	Emission Factor	Control Efficiency ³	Uncontrolled Emissions	Controlled Emissions	
	lb/MSF 3/8"	%	tpy	lb/hr	tpy
Condensable PM ¹	0.15	90%	90	2.63	9.00
SO ₂ ²	0.04	---	22.2	6.48	22.20

Pollutant	Emission Factor ⁴	Control Efficiency ⁵	Uncontrolled Emissions	Controlled Emissions	
	lb/MSF 3/8"	%	tpy	lb/hr	lb/MSF 3/8"
Acetaldehyde	1.00E-02	95%	6.00E+00	0.09	3.00E-01
Methylene Diphenyl Diisocyanate	1.10E-03	95%	6.60E-01	9.63E-03	3.30E-02
Phenol	1.50E-02	95%	9.00E+00	1.31E-01	4.50E-01

Notes: 1. Emission factor taken from AP-42 Section 10.6.1, Table 10.6.1-4 for uncontrolled condensable PM.

2. Emission factor taken from AP-42 Section 10.6.1, Table 10.6.1-5.

3. Table 10.6.1-4 does not provide a condensable PM emission factor for WESP + RTO control. Condensable PM control efficiency is calculated by dividing the WESP + RTO condensable PM emission factor for the dryers provided in Table 10.6.1-1 by the uncontrolled condensable PM emission factor for the dryers provided in Table 10.6.1-1 (6.5%), conservatively rounding up to the nearest 10% (10%), and subtracting from 100% (90%).

4. Emission factors taken from AP-42 Section 10.6.1, Table 10.6.1-4.

5. Control efficiency taken from SPI (vendor).

RTOs – Calculations were based on the following:

RTO 1-4 = 72 MMBtu/hr; Hours of NG Operation = 8760; NG Heating Value = 1,050 BTU/scf; Hours of Propane Operation = 2,000; Propane Heating Value = 90,500 Btu/gal.

Pollutant	NG EF ¹	Propane EF ³	NG Potential Emissions ⁴		Propane Potential Emissions ⁵		Maximum Uncontrolled RTO Emissions ⁶	
	lb/MMft ³	lb/Mgal	lb/hr	lb/hr	tpy	lb/hr	tpy	tpy
Condensable PM	5.7	0.6	0.39	1.71	0.48	0.48	0.48	1.80
SO ₂	0.60	0.002	0.04	0.18	0.00	0.00	0.04	0.18



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2600 Bull Street, Columbia, SC 29201

Phone: 803-898-4123 Fax: 803-898-4079

Company Name:

Grant Allendale LP

Permit Writer:

Anna Mooney

Permit Number:

0160-0020-CB

Date:

November 24, 2008

Pollutant	NG EF ²	Propane EF	NG Potential Emissions	
	lb/MMft3	lb/gal	lb/hr	tpy
Benzene	2.10E-03	--	1.44E-04	6.31E-04
Dichlorobenzene	1.20E-03	--	8.23E-05	3.60E-04
n-Hexane	1.80E+00	--	1.23E-01	5.41E-01
Naphthalene	6.10E-04	--	4.18E-05	1.83E-04
Toluene	3.40E-03	--	2.33E-04	1.02E-03
Cadmium	1.10E-03	--	7.54E-05	3.30E-04
Chromium	1.40E-03	--	9.60E-05	4.20E-04
Molybdenum	1.10E-03	--	7.54E-05	3.30E-04
Nickel	2.10E-03	--	1.44E-04	6.31E-04
Vanadium	2.20E-03	--	1.51E-04	6.61E-04
Zinc	2.90E-02	--	1.99E-03	8.71E-03

Notes: 1. Emission factors taken from AP-42 Section 1.4, Table 1.4-1 (NOx w/low NOx burners and CO), Table 1.4-2 (PM, PM10, SO2, VOC). PM emissions include condensable PM.

2. Emission factors taken from AP-42 Section 1.4, Table 1.4-3 and 1.4-4.

3. Emission factors taken from AP-42 Section 1.5, Table 1.5-1.

4. Emissions are calculated assuming 2,000 hours of operation.

5. Emissions are calculated assuming 8,760 hours of operation.

6. Maximum emissions are the worst case emissions of two operating scenarios: 8,760 hours of operation on natural gas, or 6,760 hours of operation on natural gas and 2,000 hours of operation on propane.

Total Emissions from Stacks H1 and H2

Criteria Pollutants:

Pollutant	Uncontrolled	Controlled	
	tpy	lb/hr	tpy
PM	2962.42	58.99	227.35
PM ₁₀	2962.42	58.99	227.35
NO _x	408.95	119.28	408.95
SO ₂	117.1	28.14	117.10
CO	4143.18	302.11	1035.79
VOC	7980.76	116.39	399.04

Toxic Air Pollutants

Pollutant	Uncontrolled	Controlled H1 & H2	
	tpy	lb/hr	tpy
Acetaldehyde	6.58E+01	7.70E-01	3.29E+00
Acetophenone	1.21E-05	1.38E-07	6.06E-07
Acrolein	5.22E+01	5.96E-01	2.61E+00
Benzene	1.94E+01	2.21E-01	9.69E-01
Bis(2-ethylhexyl)phthalate	1.78E-04	2.03E-06	8.90E-06
2-Butanone (MEK)	2.05E-02	2.34E-04	1.02E-03
Carbon Tetrachloride	1.70E-01	1.95E-03	8.52E-03
Chlorine	2.99E+00	3.42E-02	1.50E-01
Chlorobenzene	1.25E-01	1.43E-03	6.25E-03
Chloroform	1.06E-01	1.21E-03	5.30E-03



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Pollutant	Uncontrolled	Controlled H1 & H2	
	tpy	lb/hr	tpy
Cumene	2.83E+01	3.23E-01	1.42E+00
Dichlorobenzene	3.60E-04	8.23E-05	3.60E-04
2,4-Dinitrophenol	6.82E-04	7.79E-06	3.41E-05
Ethylbenzene	1.17E-01	1.34E-03	5.87E-03
Formaldehyde	1.32E+03	3.85E+01	1.32E+02
n-Hexane	5.41E-01	1.23E-01	5.41E-01
Hydrogen Chloride	7.20E+01	8.22E-01	3.60E+00
Methanol	8.61E+01	2.51E+00	8.61E+00
Methylene Diphenyl Diisocyanate	6.60E-01	9.63E-03	3.30E-02
MIBK	4.01E+00	4.58E-02	2.01E-01
Naphthalene	3.68E-01	4.24E-03	1.86E-02
4-Nitrophenol	4.17E-04	4.76E-06	2.08E-05
Pentachlorophenol	1.93E-04	2.21E-06	9.66E-06
Phenol	1.69E+01	2.22E-01	8.46E-01
Propionaldehyde	5.89E+00	6.73E-02	2.95E-01
Styrene	7.20E+00	8.22E-02	3.60E-01
2,3,7,8- Tetrachlorodibenzo-p- dioxin	3.26E-08	3.72E-10	1.63E-09
Toluene	1.12E+01	1.28E-01	5.61E-01
2,4,6-Trichlorophenol	8.34E-05	9.52E-07	4.17E-06
Vinyl Chloride	6.82E-02	7.79E-04	3.41E-03
Xylenes	5.24E+00	5.98E-02	2.62E-01
Antimony	2.99E-02	3.42E-04	1.50E-03
Arsenic	8.34E-02	9.52E-04	4.17E-03
Beryllium	4.17E-03	4.76E-05	2.08E-04
Cadmium	1.59E-02	2.53E-04	1.11E-03
Chromium	8.00E-02	1.00E-03	4.40E-03
Cobalt	2.46E-02	2.81E-04	1.23E-03
Lead	1.82E-01	2.08E-03	9.09E-03
Manganese	6.06E+00	6.92E-02	3.03E-01
Mercury	1.33E-02	1.51E-04	6.63E-04
Molybdenum	3.30E-04	7.54E-05	3.30E-04
Nickel	1.26E-01	1.57E-03	6.88E-03
Phosphorous	1.02E-01	1.17E-03	5.11E-03
Selenium	1.06E-02	1.21E-04	5.30E-04
Vanadium	6.61E-04	1.51E-04	6.61E-04
Zinc	8.71E-03	1.99E-03	8.71E-03
Total HAP	1.71E+03	4.46E+01	1.56E+02

Emissions from Stack E1

Stack E1 includes emissions from Unit ID 04 – Thermal Oil Heater. Calculations were based on the following:

TOH Capacity = 75 MMBtu/hr; 8,760 hours of operation per year; 1,050 Btu/scf



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Pollutant	Emission Factor ¹	Control Efficiency	Uncontrolled Potential Emissions	
	lb/MMft ³	%	lb/hr	tpy
PM ¹	7.6	---	0.54	2.38
PM ₁₀ ¹	7.6	---	0.54	2.38
NO _x ²	50	---	3.57	15.64
SO ₂ ¹	0.60	---	0.04	0.19
CO ²	84	---	6.00	26.28
VOC ¹	5.5	---	0.39	1.72

Pollutant	Emission Factor ³	Control Efficiency	Uncontrolled Potential Emissions	
	lb/ODT	%	lb/hr	tpy
Benzene	2.10E-03	---	1.50E-04	6.57E-04
Dichlorobenzene	1.20E-03	---	8.57E-05	3.75E-04
Formaldehyde	7.50E-02	---	5.36E-03	2.35E-02
n-Hexane	1.80E+00	---	1.29E-01	5.63E-01
Naphthalene	6.10E-04	---	4.36E-05	1.91E-04
Toluene	3.40E-03	---	2.43E-04	1.06E-03
Cadmium	1.10E-03	---	7.86E-05	3.44E-04
Chromium	1.40E-03	---	1.00E-04	4.38E-04
Molybdenum	1.10E-03	---	7.86E-05	3.44E-04
Nickel	2.10E-03	---	1.50E-04	6.57E-04
Vanadium	2.20E-03	---	1.57E-04	6.88E-04
Zinc	2.90E-02	---	2.07E-03	9.07E-03
TOTAL HAP	1.89E+0	---	1.35E-01	5.90E-01

Notes: 1. Emission factor taken from Table 1.4-2. PM and PM10 emissions include condensable PM.

2. Emission factors taken from AP-42 Section 1.4, Table 1.4-1 (NOx w/low NOx burners).

3. Emission factors taken from AP-42 Section 1.4, Table 1.4-3 and 1.4-4.

Emissions from Stack D1

Emissions from stack D1 include Unit ID 13 – BH01. Emission calculations were based on a capacity of 76,201 dscfm.

Pollutant	Emission Factor	Control Efficiency	Uncontrolled Emissions	Controlled Emissions	
	lb/ft ³		tpy	lb/hr	tpy
PM	3.48E-07	99%	697.32	1.59	6.97
PM ₁₀	3.48E-07	99%	697.32	1.59	6.97

Pollutant	Stack Test Emission Rate ¹	Production Rate ²	Emission Factor	Safety Factor	Modified Emission Factor	Maximum Production Rate		Uncontrolled Emissions	
	lb/hr	MSF 3/8/hr	lb/ MSF 3/8		lb/ MSF 3/8	MSF 3/8/hr	MSF 3/8/yr	lb/hr	tpy



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VOC	3.01	119.1	0.03	1.25	0.03	175	1,200,000	5.53	18.97
Formaldehyde	0.21	119.5	0.0018	1.25	0.0022	175	1,200,000	0.38	1.32
Methanol	0.12	119.1	0.0010	1.25	0.0013	175	1,200,000	0.22	0.76

Notes: 1. Stack test emission rates are the maximum emission rate from three test runs. VOC emission rates are calculated by converting THC emission rates from Method 25A testing to a VOC as propane value, and adding Method 9801 formaldehyde and methanol results.

2. Production rates correspond to the test run producing the maximum emission rate for each pollutant.

Emissions from Stack D1a

Emissions from Stack D1a include Unit ID 13 – BH01a. Emission calculations were based on a capacity of 89,649dscfm. Uncontrolled emissions of VOC, Formaldehyde, and Methanol are based on stack test results from D1 because D1a has not yet been constructed. The ratio of D1a flow/D1 flow was multiplied by the emission factor in order to calculate uncontrolled emissions for these pollutants.

Pollutant	Emission Factor ²	Control Efficiency	Uncontrolled Emissions	Controlled Emissions	
	lb/ft ³		tpy	lb/hr	tpy
PM	3.48E-07	99%	820.38	1.87	8.20
PM ₁₀	3.48E-07	99%	820.38	1.87	8.20

Pollutant	Stack Test Emission Rate ¹	Production Rate ²	Emission Factor	Safety Factor	Modified Emission Factor	Maximum Production Rate		Uncontrolled Emissions	
	lb/hr	MSF 3/8/hr	lb/ MSF 3/8		lb/ MSF 3/8	MSF 3/8/hr	MSF 3/8/yr	lb/hr	tpy
VOC	3.01	119.1	0.03	1.25	0.037	175	1,200,000	6.51	22.32
Formaldehyde	0.21	119.5	0.0021	1.25	0.0026	175	1,200,000	0.45	1.55
Methanol	0.12	119.1	0.0012	1.25	0.0015	175	1,200,000	0.26	0.89

Notes: 1. Stack test emission rates are the maximum emission rate from three test runs. VOC emission rates are calculated by converting THC emission rates from Method 25A testing to a VOC as propane value, and adding Method 9801 formaldehyde and methanol results.

2. Production rates correspond to the test run producing the maximum emission rate for each pollutant.

Emissions from Stack D3

Emissions from Stack D3 include Unit ID 11 – Forming Line, BH03b, BH04a, and BH04b. Emission calculations were based on the following capacities: BH03b – 50,502dscfm; BH04a – 53988dscfm; BH04b – 69537dscfm.

Baghouse ID	Pollutant	Emission Factor ²	Control Efficiency	Uncontrolled Emissions	Controlled Emissions	
		lb/ft ³		tpy	lb/hr	tpy
03b	PM	3.48E-07	99%	462.15	1.06	4.62
03b	PM ₁₀	3.48E-07	99%	462.15	1.06	4.62
04a	PM	3.48E-07	99%	494.05	1.13	4.94
04a	PM ₁₀	3.48E-07	99%	494.05	1.13	4.94
04b	PM	3.48E-07	99%	636.34	1.45	6.36
04b	PM ₁₀	3.48E-07	99%	636.34	1.45	6.36



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Pollutant	Stack Test Emission Rate ¹	Production Rate ²	Emission Factor	Safety Factor	Modified Emission Factor	Maximum Production Rate		Uncontrolled Emissions	
	lb/hr	MSF 3/8/hr	lb/ MSF 3/8		lb/ MSF 3/8	MSF 3/8/hr	MSF 3/8/yr	lb/hr	tpy
VOC	25.94	113.8	0.23	2	0.46	175	1,200,000	79.78	273.53
Formaldehyde	0.55	113.8	0.005	2	0.01	175	1,200,000	1.69	5.80
Methanol	14.03	113.8	0.12	2	0.25	175	1,200,000	43.15	147.94

Notes: 1. Stack test emission rates are the maximum emission rate from three test runs. VOC emission rates are calculated by converting THC emission rates from Method 25A testing to a VOC as propane value, and adding Method 9801 formaldehyde and methanol results.

2. Production rates correspond to the test run producing the maximum emission rate for each pollutant.

Stack D3a

Emissions from Stack D3a include Unit ID 12 – Dry Bins/Screens/Conveyors, BH03a. Emission calculations were based on a capacity of 48,510dscfm.

Pollutant	Emission Factor ²	Control Efficiency	Uncontrolled Emissions	Controlled Emissions	
	lb/ft ³		tpy	lb/hr	tpy
PM	3.48E-07	99%	443.92	1.01	4.44
PM ₁₀	3.48E-07	99%	443.92	1.01	4.44

Pollutant	Stack Test Emission Rate ¹	Production Rate ²	Emission Factor	Safety Factor	Modified Emission Factor	Maximum Production Rate		Uncontrolled Emissions	
	lb/hr	MSF 3/8/hr	lb/ MSF 3/8		lb/ MSF 3/8	MSF 3/8/hr	MSF 3/8/yr	lb/hr	tpy
VOC	3.30	110.3	0.02996	1.25	0.04	175	1,200,000	6.55	22.47
Formaldehyde	0.07	110.3	0.0006	1.25	0.0008	175	1,200,000	0.14	0.48
Methanol	0.16	110.3	0.0015	1.25	0.0018	175	1,200,000	0.32	1.09

Notes: 1. Stack test emission rates are the maximum emission rate from three test runs. VOC emission rates are calculated by converting THC emission rates from Method 25A testing to a VOC as propane value, and adding Method 9801 formaldehyde and methanol results.

2. Production rates correspond to the test run producing the maximum emission rate for each pollutant.

Stack D2

Emissions from Stack D2 include Unit ID 09 – Green End System, BH02a and BH02b. Emission calculations were based on the following capacities: BH02a – 72,516dscfm; BH02b – 79887dscfm.

Baghouse ID	Pollutant	Emission Factor ²	Control Efficiency	Uncontrolled Emissions	Controlled Emissions	
		lb/ft ³		tpy	lb/hr	tpy
02a	PM	1.11E-06	99%	2123.51	4.85	21.24



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		Emission Factor ²	Control Efficiency	Uncontrolled Emissions	Controlled Emissions	
02a	PM ₁₀	1.11E-06	99%	2123.51	4.85	21.24
02b	PM	1.11E-06	99%	2339.36	5.34	23.39
02b	PM ₁₀	1.11E-06	99%	2339.36	5.34	23.39

Pollutant	Stack Test Emission Rate ¹	Production Rate ²	Emission Factor	Safety Factor	Modified Emission Factor	Maximum Production Rate		Uncontrolled Emissions	
	lb/hr	MSF 3/8/hr	lb/ MSF 3/8		lb/ MSF 3/8	MSF 3/8/hr	MSF 3/8/yr	lb/hr	tpy
VOC	100.74	118.6	0.85	1.25	1.06	175	1,200,000	185.81	637.06
Formaldehyde	0.11	116.7	0.00	1.25	0.00	175	1,200,000	0.21	0.71
Methanol	0.54	116.7	0.00	1.25	0.01	175	1,200,000	1.01	3.47

Notes: 1. Stack test emission rates are the maximum emission rate from three test runs. VOC emission rates are calculated by converting THC emission rates from Method 25A testing to a VOC as propane value, and adding Method 9801 formaldehyde and methanol results.

2. Production rates correspond to the test run producing the maximum emission rate for each pollutant.

Tank Emissions

Emissions for Tanks 1-12 were calculated using Tanks 4.09 and based on 8,760 annual hours of operation.

MDI Resin and Wax Tanks (Tanks 1, 2, 7, 8)

Pollutant	Uncontrolled Emissions	
	lb/hr	tpy
VOC	0.07	0.31
Methylene Diphenyl Diisocyanate	0.04	0.16

TANKS 4.09 (Pvp is so low, arbitrarily set to PF tanks 0.018 lb/hr, for 4 tanks (0.07)

Assumed 50% MDI in vapor phase, for 4 tanks

PF Resin Tanks (Tanks 3, 4, 5, 6)

Pollutant	Uncontrolled Emissions	
	lb/hr	tpy
VOC	0.07	0.31
Formaldehyde	3.60E-04	1.58E-03
Phenol	1.40E-04	6.13E-04

TANKS 4.09 (Pvp is so low, arbitrarily set to PF tanks 0.018 lb/hr, for 4 tanks

HCOH=0.5% in liquid and vapor phases

C₆H₇O=0.2% in liquid and vapor phases

MUPF Resin Tank (TNK 9)

Pollutant	Uncontrolled Emissions	
	lb/hr	tpy
VOC	0.02	0.08
Formaldehyde	1.25E-04	5.48E-04



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Pollutant	Uncontrolled Emissions	
	lb/hr	tpy
Methanol	1.25E-04	5.48E-04

TANKS 4.09 (Pvp is so low, arbitrarily set to PF tanks 0.018 lb/hr

CH₃OH & HCOH=0.7% in liquid and vapor phases according to Earl Phillips

letter (Hexion) to Ed Griffin (Grant) on Oct 31, 2007

Gasoline Storage Tank (Tank 12)

Pollutant	Uncontrolled Emissions	
	lb/hr	tpy
VOC	0.03	0.12

Diesel Storage Tanks (Tanks 10 & 11)

Pollutant	Uncontrolled Emissions	
	lb/hr	tpy
VOC	0.01	0.01

Generator and Fire Pump

Emissions for the diesel generator (EMERG1) and fire pump (DFP) were based on the following:

Equipment Capacities		
EMERG1	1,400	hp
DFP	525	hp
Hours of Operation	500	hr/yr
Heating Value of Diesel	19,300	Btu/lb
Power Conversion	2,547	Btu/hr/hp

Pollutant	EMERG1 Emission Factor ¹	DFP Emission Factor ²	EMERG1 Potential Emissions		DFP Potential Emissions	
	lb/MMBtu	lb/MMBtu	lb/hr	tpy	lb/hr	tpy
PM	0.0697	0.31	0.25	0.06	0.41	0.10
PM ₁₀	0.0573	0.31	0.20	0.05	0.41	0.10
NO _x	3.2	4.41	11.41	2.85	5.90	1.47
SO ₂	1.515	0.29	5.40	1.35	0.39	0.10
CO	0.85	0.95	3.03	0.76	1.27	0.32
VOC	0.09	0.35	0.32	0.08	0.47	0.12

Notes: 1. Emission factors taken from AP-42 Section 3.4, Table 3.4-1 (NO_x, SO₂, CO, VOC), and Table 3.4-2 (PM, PM₁₀).

2. Emission factors taken from AP-42 Section 3.3, Table 3.3-1.

Propane Vaporizers

Emissions for the propane vaporizers (PPV1 and PPV2) were calculated based on the following:

Equipment Capacities		
PPVP1	3	MMBtu/hr
PPVP2	5	MMBtu/hr



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Hours of Operation on Propane	2,000	hr/yr
Heating Value of Propane	90,500	Btu/gal

Pollutant	Propane EF ¹ lb/MMBtu	Propane Potential Emissions	
		lb/hr	tpy
PM	0.0044	3.52E-02	0.04
PM ₁₀	0.0044	3.52E-02	0.04
NO _x	0.15	1.20E+00	1.20
SO ₂	0.019	1.52E-01	0.15
CO	0.021	1.68E-01	0.17
VOC	0.0055	4.40E-02	0.04

Notes: 1. Emission factors taken from AP-42 Section 1.5, Table 1.5-1.

Paint Booths

Emissions for the paint booths (PB1 and PB2) were calculated based on the following:

Equipment Capacities		
PB1 & PB2	125	gal/hr
Hours of Operation	8,760	hr/yr

Pollutant	Emission Factor ¹ lb/gal	Potential Emissions	
		lb/hr	tpy
VOC	0.07	9.2	40.45

Notes: 1. Maximum value from paint MSDS.

Space Heaters

Emissions for the space heaters were calculated based on the following:

Equipment Capacities		
SHTR	20.89	MMBtu/hr
Hours of Operation	8,760	hr/yr
Heating Value Natural Gas	1,050	BTU/scf

Pollutant	Emission Factor ¹ lb/MMft ³	Potential Emissions	
		lb/hr	tpy
PM	7.6	0.15	0.66
PM ₁₀	7.6	0.15	0.66
NO _x	100	1.99	8.71
SO ₂	0.60	0.01	0.05
CO	84	1.67	7.32
VOC	5.5	0.11	0.48

Notes: 1. Emission factors taken from AP-42 Section 1.4, Tables 1.4-1 and 1.4-2.

SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.